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- (56) Prior Art Documents
US 4979520
EP 123474
EP 4204
- (57) Claim

1. A stretcher for carrying a patient, the stretcher being fabricated from foldable board material which provides a substantially flat base on which a patient can lie and longitudinal walls along opposite longitudinal sides of the base, the walls extending upwardly from the base whereby to provide longitudinal reinforcement to the base while the patient is being carried, the walls being formed by flaps extending along opposite sides of the base and folded upwardly, said board material having a lateral fold line in an intermediate position along the length of the stretcher and about which the longitudinal walls and base can be folded when the longitudinal walls are in a position in which they are substantially co-planar with the base whereby the stretcher can also be used to support and carry a patient in a sitting position, and wherein a storage condition for the stretcher is provided by folding the stretcher about said lateral fold line such that the parts of the board material at opposite sides of the fold line lie in face-to-face relationship.

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Regulation 3.2

A U S T R A L I A
Patents Act 1990
COMPLETE SPECIFICATION
FOR A STANDARD PETTY PATENT
(ORIGINAL)

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Invention Title: "Stretchers"

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The following statement is a full description of this invention, including the best method of performing it known to me/us:

STRETCHERS

The present invention relates to a stretcher and more particularly to a stretcher which can be produced relatively inexpensively so that it can be disposed of after a single use.

5

Conventional stretchers for carrying sick or injured patients conventionally comprise either a rigid base structure with an appropriate covering and handles, or a collapsible structure which is erectable from a reduced volume configuration for ease of transportation and storage and an erected configuration for use. In either case these stretchers are designed for repeated use over long periods of time and are relatively expensive to produce. After each usage the stretcher must be cleaned. While the use of conventional reusable stretchers which are cleaned between usages is quite acceptable under many circumstances there are circumstances, for example involving mass casualties as may arise in the event of a major railway accident or in battle field situations, where it is necessary to handle a large number of casualties in a relatively short space of time. Under these circumstances there may not be available the required number of conventional stretchers to deal with the situation and the pressures on usage may be so great that it might not prove possible to adequately clean the stretchers between usages.

20 According to the present invention, there is provided a stretcher for carrying a patient, the stretcher being fabricated from foldable board material which provides a substantially flat base on which a patient can lie and longitudinal walls along opposite longitudinal sides of the base, the walls extending upwardly from the base whereby to provide longitudinal reinforcement to the base while the patient is being carried, the walls being formed by flaps extending along opposite sides of the base and folded upwardly, 25 said board material having a lateral fold line in an intermediate position along the length of the stretcher and about which the longitudinal walls and base can be folded when the longitudinal walls are in a position in which they are substantially co-planar with the base whereby the stretcher can also be used to support and carry a patient in a sitting position, 30 and wherein a storage condition for the stretcher is provided by folding the stretcher about said lateral fold line such that the parts of the board material at opposite sides of the fold line lie in face-to-face relationship.

Advantageously, the longitudinal walls include handles by which the stretcher is carried, and, preferably, the handles are formed by hand holes within the longitudinal side walls.

5 An embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a plan view showing a flat blank of board material from which the stretcher of a preferred embodiment of the invention is formed;

Figure 2 shows the blank when folded in half for storage purposes;

10 Figure 3 shows the blank when unfolded and erected for use as a stretcher;

Figure 4 shows the blank when used in a configuration for carrying a patient in a sitting condition; and

Figure 5 shows a modified form of blank.

15 A disposable stretcher in accordance with the preferred embodiment of the invention is fabricated from a flat blank of foldable board (Figure 1). The board is of elongate form having a central lateral fold line 2 and two longitudinal fold lines 4 each adjacent to one of the two longitudinal edges 6 of the board. The board is cut or stamped from flat stock and is formed with the transverse and longitudinal
20 fold lines 2, 4. During the manufacturing stage, the board is also provided with hand holes 8 which are cut or stamped into the edge portions 10 defined between each of the longitudinal fold lines 4 and the adjacent longitudinal edges 6 of the board and which, in the erected stretcher constitute longitudinal side walls.

25 For packing and storage purposes after manufacture the board is simply folded about the central lateral fold line 2 into the configuration shown in Figure 2. To erect the board for use as a stretcher, the board is unfolded into its original substantially flat condition, and the two longitudinal side edge portions 10 are folded upwardly about the fold lines 4 to form generally upright longitudinally extending
30 side walls which impart significant longitudinal rigidity to the structure. The erected configuration is illustrated in Figure 3. The longitudinal flat area 12 defined between these longitudinal walls constitutes a flat base on which a patient can lie. By grasping the hand holes 8, the stretcher, with the patient resting on the flat base

12, can be carried to transport the patient.

As will be apparent, the board from which the stretcher is fabricated must have sufficient inherent strength to carry the weight of an adult patient without collapsing, that is without the flat base of the stretcher being subject to substantial deformation while the patient is being carried. By way of non-limiting example, corrugated cardboard having a thickness of about 10 mm and composed of several layers of corrugations is a suitable material. The corrugations of the board are directed transversely to the longitudinal axis of the stretcher so that the corrugations act to reinforce the flat base 12 against bowing about a longitudinal axis under the weight of the patient. The erected side walls 10 act to reinforce the flat base against bowing about transverse axes. When the board is of cardboard it is preferably treated with a water-proofing material so that it is resistant to weakening under the effects of water and other liquids at least for a period of time sufficient to maintain the strength and integrity of the board whilst the stretcher is being used. Corrugated boards of similar strength can also be fabricated from plastics materials which will usually have inherent resistance against degradation by water or other liquids for a period of time required for use.

The stretcher is designed to carry adult patients and in one practical embodiment, by way of example only, the stretcher fabricated from corrugated cardboard as described above was substantially 1.85 m. in length, with the flat base being 0.48 m. in width and the side walls 10 being 0.185 m. in depth.

After its single usage, the stretcher can be disposed of for example either by incineration or by being buried in the ground. When buried in the ground cardboard will naturally decompose under the effects of moisture, bacterial activity, and earthworm activity. If the board is fabricated from plastics material, a suitable biodegradable grade of plastics will be required.

By partially unfolding the board from its folded state into the configuration shown in Figure 4 without erecting the side walls, the sheet can be used to support

and carry a patient in a sitting position.

5 The several hand holes 8 provided along each longitudinal side edge portion of the board facilitate handling and manoeuvring as required either or when the sheet is erected as a stretcher or when it is being used to carry a seated patient. The hand holes also are capable of receiving straps for securing a patient to the stretcher, for example for the purposes of spinal immobilisation. Hand holes may also be provided at each end of the sheet to enable the folded board easily to be carried and also to provide additional hand holes for possible use when carrying a patient. As 10 will be apparent, the hand holes 8 act as handles, and to incorporate the hand holes for this purpose, in alternative embodiments separate handles could be mounted either on the side walls or other parts of the board for this purpose.

15 Flat board material having the necessary strength is readily available and the stretcher can readily be produced in an inexpensive manner by stamping to produce the basic shape and hand holes, and by creasing to produce the transverse fold line and two longitudinal fold lines. The cost of a stretcher produced in this way is considerably less than that of conventional stretchers as previously discussed, and significant numbers of these stretchers can be kept in storage for emergency use. 20 The stretchers are also of relatively light weight and of relatively small volume when folded flat for storage purposes which means that large numbers of stretchers can be air-lifted directly to the site of an emergency situation where mass evacuation of patients or casualties is required.

25 Although the stretcher can be fabricated with straight end edges on the base and side walls as shown in Figures 1 to 4, the edges may be rounded with a convex configuration as shown in Figure 5 to avoid the use of angular corners on the stretcher.

The embodiment has been described by way of example only and modifications are possible within the scope of the invention.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. A stretcher for carrying a patient, the stretcher being fabricated from foldable board material which provides a substantially flat base on which a patient can lie and longitudinal walls along opposite longitudinal sides of the base, the walls extending upwardly from the base whereby to provide longitudinal reinforcement to the base while the patient is being carried, the walls being formed by flaps extending along opposite sides of the base and folded upwardly, said board material having a lateral fold line in an intermediate position along the length of the stretcher and about which the longitudinal walls and base can be folded when the longitudinal walls are in a position in which they are substantially co-planar with the base whereby the stretcher can also be used to support and carry a patient in a sitting position, and wherein a storage condition for the stretcher is provided by folding the stretcher about said lateral fold line such that the parts of the board material at opposite sides of the fold line lie in face-to-face relationship.

2. A stretcher according to claim 1, wherein the opposed end edges of the board material and which form the opposed ends of the stretcher are convexly curved as viewed in a direction at right angles to the plane of the board material.

3. A stretcher according to claim 1 or claim 2, wherein the longitudinal walls include hand holes and the opposed ends of the base include hand holes.

Dated this 4th day of January, 1996

BRENDAN MICHAEL KEANE

By his Patent Attorneys:

DAVIES COLLISON CAVE

A B S T R A C T

A disposable stretcher for carrying a patient is fabricated from foldable board material such as corrugated cardboard which provides a substantially flat base on which a patient can lie and longitudinal walls along opposite longitudinal sides of the base. The walls are folded from a storage configuration into a configuration in which they are directed upwardly from the base whereby to provide longitudinal reinforcement to the base while the patient is being carried.

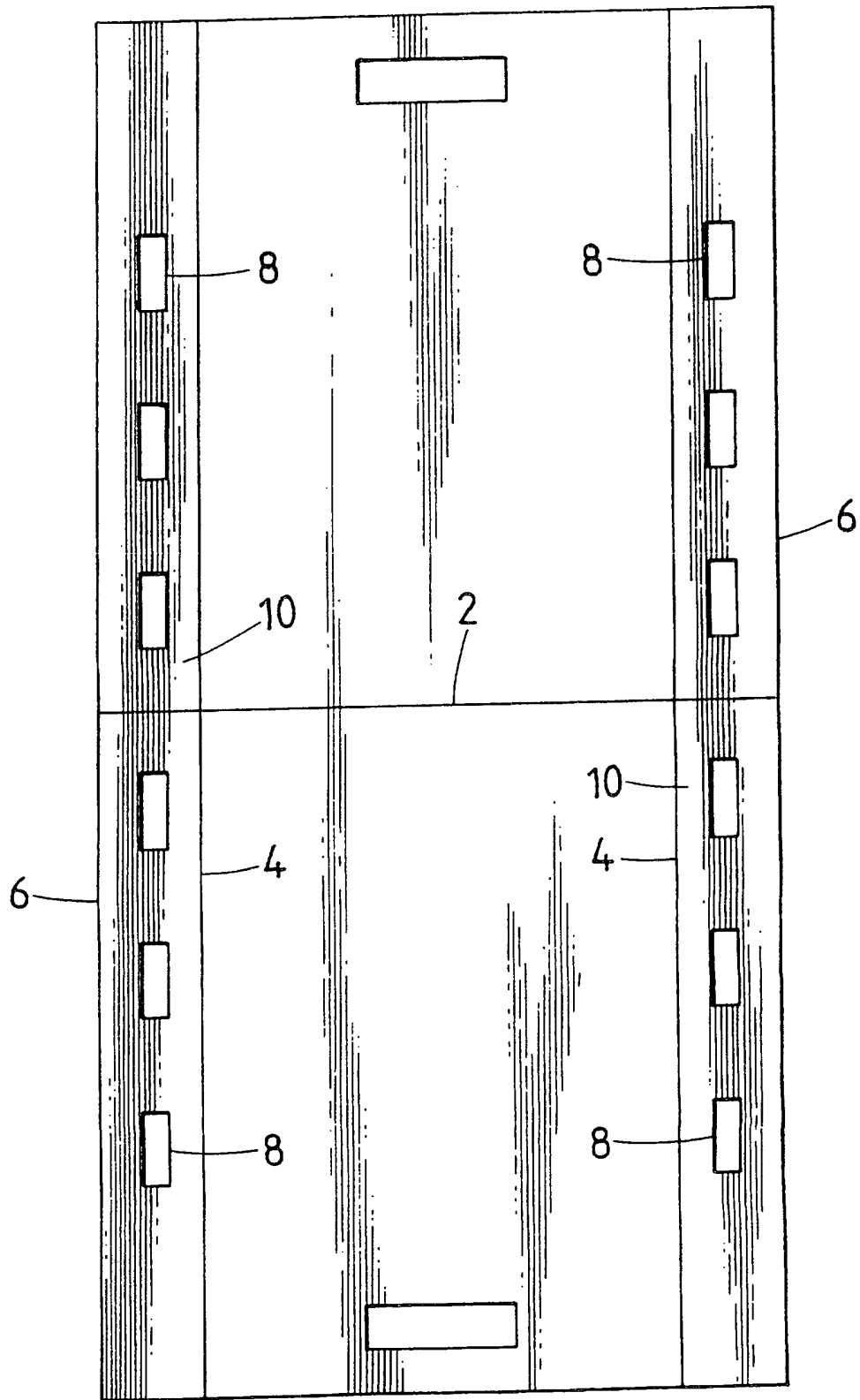


FIG 1

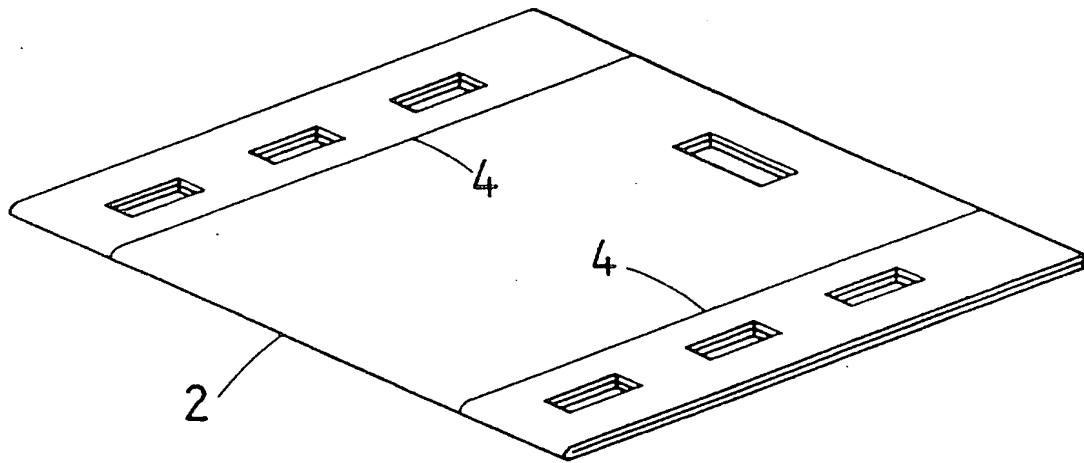


FIG 2

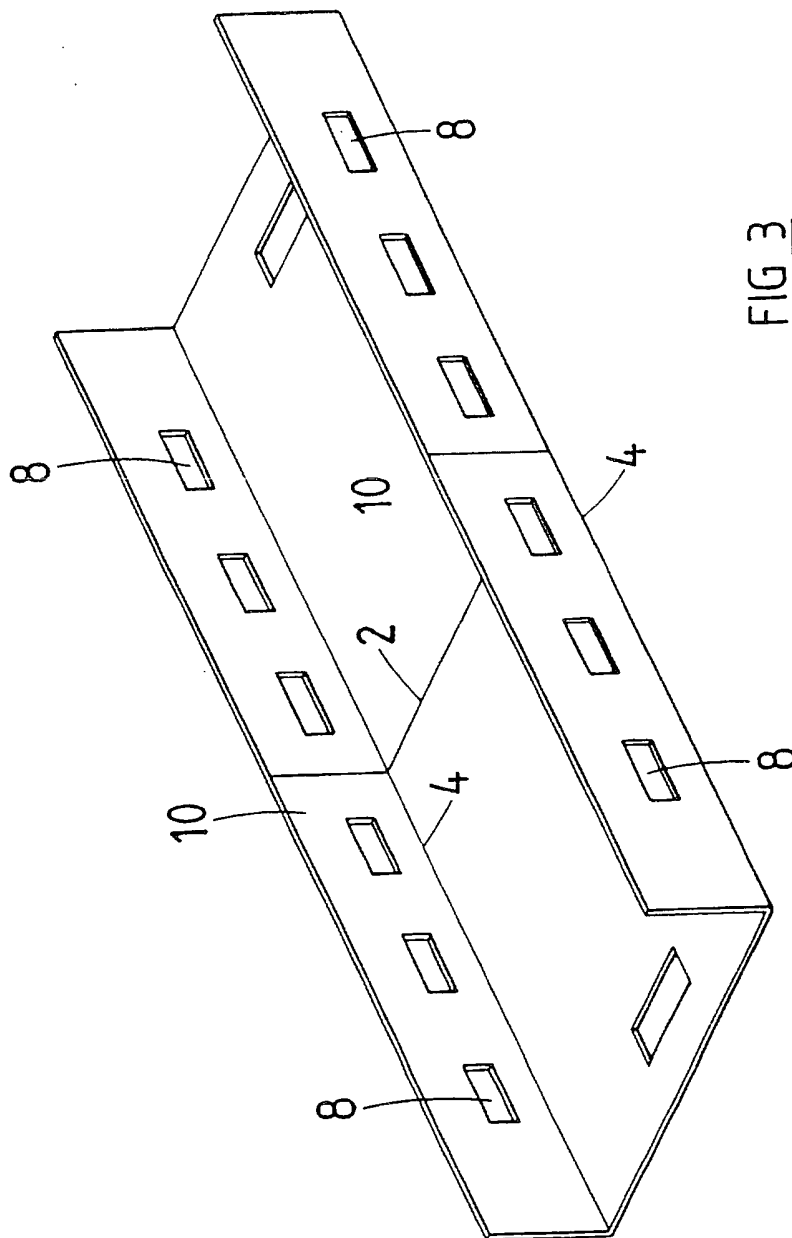


FIG 3

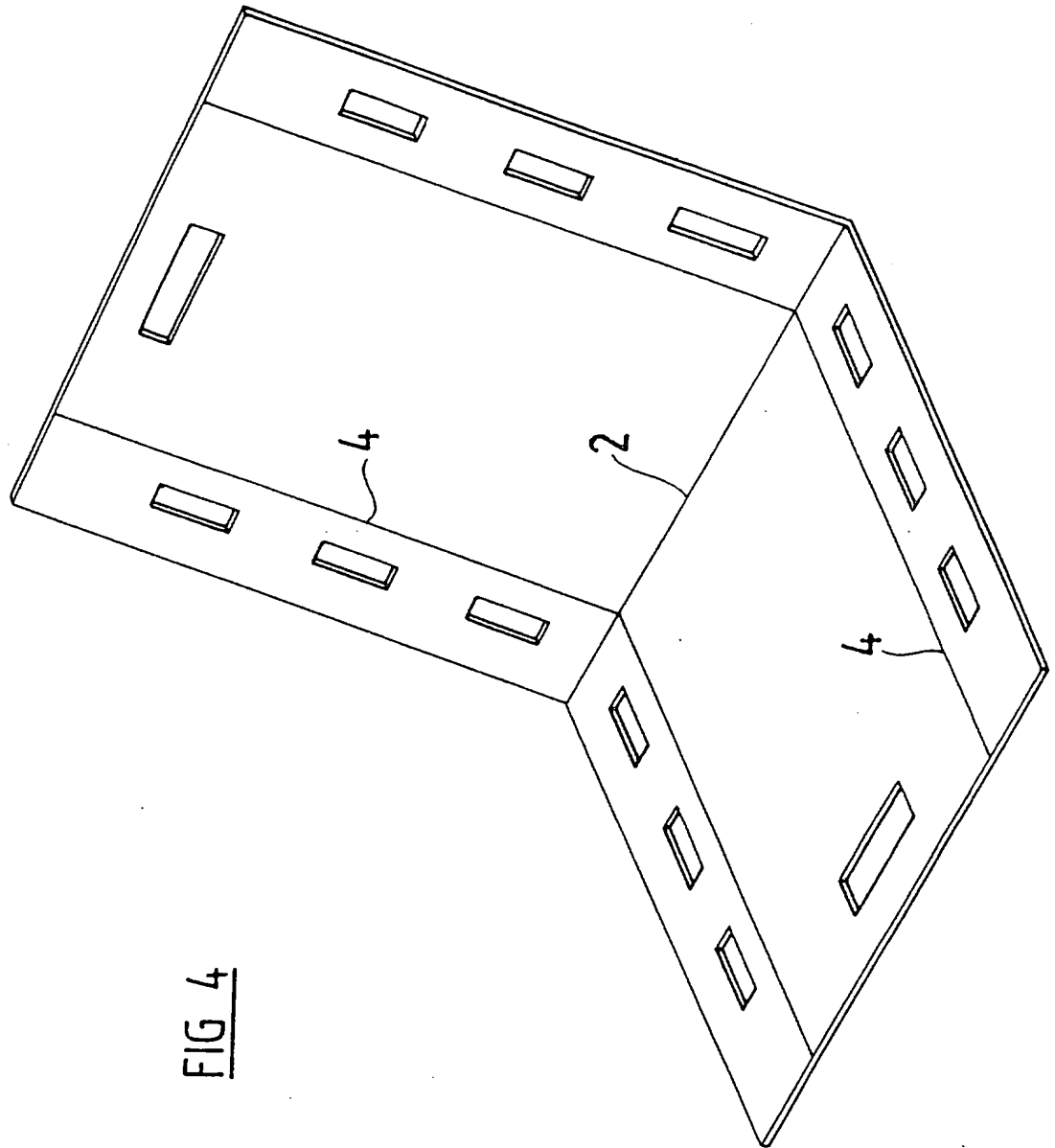


FIG 4

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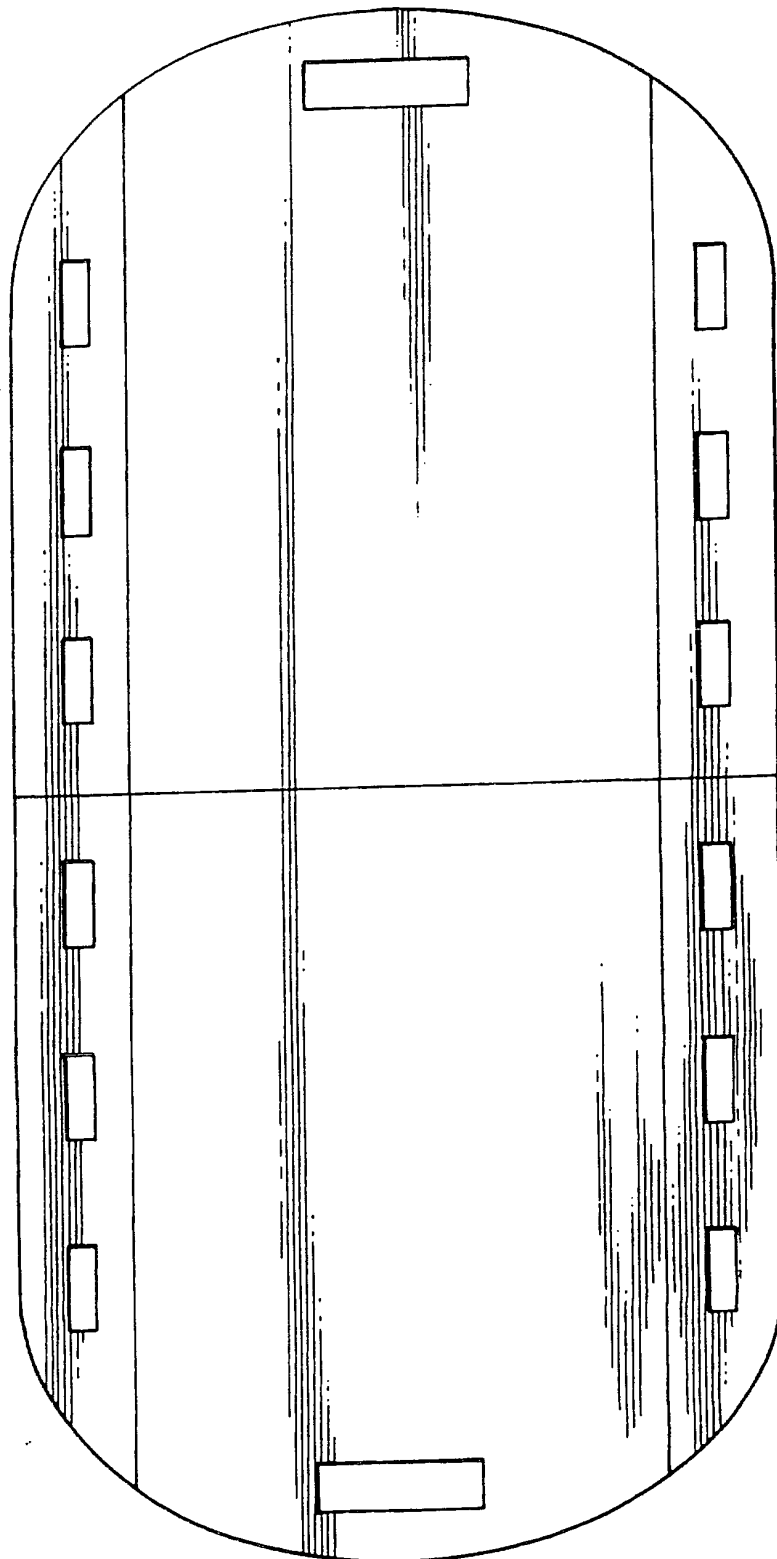


FIG 5